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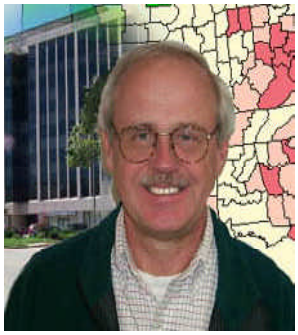
SAMPLES

A Sampling of NOAA Research People and Projects

SPRING 2001 **Office of Oceanic and Atmospheric Research** **VOLUME 2 NUMBER 1**

Meet Ants Leetmaa



Ants Leetmaa, Director, GFDL

A love of the outdoors and a "gentleman farmer" mentor set Dr. Ants Leetmaa, the new director of NOAA's Geophysical Fluid Dynamics Laboratory (GFDL) in Princeton, N.J., on a career path in climate science, a path that has been illustrious by most accounts and "rewarding" by his own.

"But my finest hour is probably yet to come at GFDL when we figure out how the planet is responding to global change," Dr. Leetmaa said, looking forward. But we will look back briefly.

A native of Estonia, Dr. Leetmaa moved to the U.S. and earned a B.S. degree in Physics from the University of Chicago in 1965, and then a Ph.D. in Oceanography from the Massachusetts Institute of Technology (MIT) in 1969. Between 1969 and 1972, he conducted postdoctoral studies at MIT.

"I've been able to combine formal training with my interests," said Dr. Leetmaa, noting his initial forays into oceanography. "I've always loved being outdoors. I was good at math and physics and found a way to build a career on those interests."

It was access to ship time that led Dr. Leetmaa to his early career as a NOAA "modern-day sea-going explorer" at the Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, FL. He worked at AOML for 14 years in oceanography.

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Steller Sea Lion on the coast of Middleton Island, Gulf of Alaska

Steller Sea Lions: Big and Remote

With Steller sea lions living in remote spots from the Okhotsk Sea to the Aleutian Islands and males weighing in at 1,700 pounds, it's hard to imagine that these sea lion populations in the North Pacific are in danger. But they have been listed as threatened or endangered since 1990, provoking controversy on how best to save them.

One thing's for sure, though: NOAA Research will be part of the solution.

The battle over actions to protect Steller sea lions *(Eumetopias jubatus)* heightened late last year when NOAA Fisheries released a report concluding that Alaskan groundfish fisheries adversely impact Steller sea lions. The biological opinion concluded that fisheries for pollock, Pacific cod and Atka mackerel jeopardize the recovery of the sea lions because of the competition for prey.

Steller sea lions are sometimes confused with California sea lions, but are much larger and lighter in color. They can be found throughout the North Pacific Ocean from the Kuril Islands and Okhotsk Sea, through the Aleutian Islands and Bering Sea, and south along the North American coast to central California.

(continue page 4)

David L. Evans,
NOAA Research AA

Transitions, transitions

A transition is a move from one thing to another. It is a time of many changes, but also a time of many challenges and opportunities. As this column goes to press, there are many questions still unanswered, such as who the new NOAA administrator will be, but I believe we also have a good idea on the direction NOAA Research will take.

Within a few days of his confirmation, Secretary Evans and I met to talk about many things, including climate change. This early introduction help him better understand the work we do and why we do it. He remembered this in his remarks following his swearing-in on Feb. 5 when he said that the American people can "count on sound science from NOAA."

Thanks to NOAA Research, the Secretary also transitioned from a freshwater aquarium in his office to a marine aquarium, stocked with plants and animals that were bred through an ornamental aquaculture project funded by Sea Grant. The tank gives him a daily, living reminder of the benefits of NOAA Research.

One of the definitions of "transition" is "an evolution from one form to another." That's an apt description of what is happening to the publication you now hold in your hand or that appears on your computer screen.

When *Samples* was created a little more than a year ago, the idea was to offer a "sample" of the NOAA Research programs and people. Each issue would have news or information about OGP, NURP, the Laboratories, the Joint Institutes, and Sea Grant to let employees know more about the different parts of NOAA Research.

Recent feedback from *Samples* readers is encouraging. Eighty-two percent of those who responded to a survey said *Samples* should continue. It was decided to take another look at *Samples* after we introduced Hot Items, the neat instant information source that appears every time you open your e-mail. Many of the news bits that once were published in *Samples* now reach you faster via Hot Items.

Starting with this issue, *Samples* will now focus on longer feature articles with more photos and graphics, another suggestion from many of the survey respondents. (For more survey results, see page 4.)

Transitions often signal the end of one thing and the beginning of another. I believe that both NOAA Research and *Samples* have left one phase behind and are entering new and exciting times.

Sea Grant Director Named Section Editor for Journal of International Science

Dr. Barry A. Costa-Pierce, current Director of the Mississippi-Alabama Sea Grant Consortium, has been selected as the new Section Editor of the Husbandry and Management Section of *Aquaculture*, the most prestigious international science journal in the growing field. The journal publishes research on the exploration, improvement, and management of all aquatic food resources - marine, freshwater, animal and plant resources - from a wide range of interdisciplinary scientists.

Sea Grant

Sea Grant Fellows Arrive

Thirty-one Sea Grant Knauss Fellows arrived in Washington, D.C., to begin their one-year fellowship. During their stay in the Washington area, these young people will get a first-hand look at how science is used in the policy arena and how decisions are made. In return, they lend their individual scientific expertise to policy-makers.

Since its inception in 1979, more than 400 fellows have participated in this program. About one-third of them have stayed and are working in government offices or in Congress. The remainder work in industry and trade associations, in state government as managers, or in academia as teachers and university researchers.

Two Knauss Fellows have now joined NOAA Research Headquarters. Jamie Krauk is working in the Office of Scientific Support and Katy Croff is in the Office of Ocean Exploration.

NOAA's Office of Ocean Exploration

DeepWorker, a submersible vessel which allows one explorer at a time to descend as deep as 2,000 feet.

A growing interest in ocean exploration, coupled with a need to develop U.S. leadership in this area, led to the inception earlier this year of the Office of Ocean Exploration (OE). OE is housed in NOAA Research, although the program cuts across all five NOAA line offices and is directed and funded through bi-partisan Congressional leadership.

OE is atuned to the recommendations of the Ocean Exploration Panel, and their findings reported in "Discovering Earth's Final Frontier: A U.S. Strategy for Ocean Exploration." (oceanpanel.nos.noaa.gov)

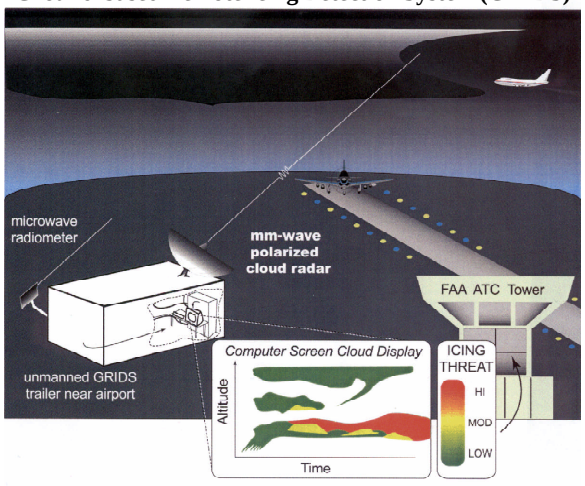
NOAA OE defines ocean exploration as the systematic search and investigation of the ocean for the purpose of discovery. The Ocean Exploration Panel defined it as discovery through disciplined, diverse observations and the recording of the findings. Ocean exploration is distinguished from much of the research that NOAA undertakes in that it is less programmatically focused, and less driven by the need to answer specific questions related to particular aspects of the NOAA mission.

Craig McLean is the Director of OE; he comes from NOAA's National Marine Sanctuary Program. Steve Hammond, leader of PMEL's Ocean Environment Research Division, is on board as the Chief Scientist, and Michael Kelly is the Deputy Director. Katy Croff, CDR Joanna Flanders, Margot Bohan and Joe Wargo have also joined the staff. More information about this exciting new office can be found at oceanexplorer.noaa.gov.

Ice Cloud or Nice Cloud?

Aircraft in-flight icing is a threat to aviation that occurs when droplets freeze on contact with cold airplane surfaces as an aircraft flies through certain cloud conditions. It is the cause of crashes that annually claim dozens of lives and almost $100 million in financial losses. The icing hazard is difficult to forecast and its presence is impossible to detect with currently available operational weather surveillance systems.

Ground-based Remote Icing Detection System (GRIDS)



A major part of the icing hazard is the presence of clouds that contain 50-500 micron super-cooled large droplets (SLDs) that readily penetrate an aircraft's slipstream to impinge and freeze on rearward portions of wings and other surfaces that are not protected with de-icing equipment. The frozen droplets then disrupt the airflow and cause the airplane to lose altitude because of reduced lift and increased drag and weight.

After seven years of research directed at this problem, the Environmental Technology Laboratory's (ETL) Radar Meteorology and Oceanography Division has developed a ground-based, remote sensing method to distinguish hazardous icing-threat clouds from non-hazardous clouds.

The detection system devised by the ETL group uses special short-wavelength, polarization radar to determine when and where SLDs are present in clouds, and when clouds are composed only of benign ice crystals which are harmlessly repelled off aircraft wings. Their technique exploits information in the polarization measurements about shape differences between the spherical droplets and the non-spherical ice particles.

This new system will take the guesswork out of determining where aircraft icing hazards exist. Both the FAA and the National Weather Service are working toward implementation of this system.

Steller Sea Lions (continued from page 1)

There is great concern about the Steller population, which has dropped by 80 percent in the past 30 years. The entire population has been listed as a threatened species since 1990, and the population west of 144°W was listed as endangered in 1997.

Several factors may be contributing to this decline, and theories include increases in parasites or disease, predation by killer whales, environmental dangers or disasters, and nutritional stress, caused by natural or human interference in amounts, quality or distribution of their prey.

To determine if factors other than fisheries competition might be important in the decline of the Steller sea lion population, Congress directed NOAA Research to study the impacts of shifts in ocean climate on North Pacific and Bering Sea ecosystems. The Pacific Marine Environmental Laboratory (PMEL) will collect data at several critical locations in order to identify localized and large-scale climate effects in the North Pacific.

PMEL also will use existing atmospheric and oceanographic models to investigate dynamics and climate variability in the North Pacific and Bering Sea.

The Environmental Technology Laboratory (ETL) and the Prince William Sound Science Center have also been funded by NOAA Research to investigate the relationship between Steller sea lions and herring in the vicinity of Kodiak Island, Alaska. The hypothesis is that the decline in Steller sea lions has more to do with declines in herring populations than with declines in pollock populations. This hypothesis is based on observations of the relationship between sea lions, herring, and pollock in Prince William Sound. ETL will be supporting this effort with lidar surveys of fish and of sea lions in the water over the next two years.

SAMPLES SURVEY RESULTS

Survey return rate - 3%

Readers who said they would read Samples if it were only published electronically - 57%
We have reduced the number of paper copies of Samples. For a hard copy, please look for them at mailboxes near you or in common areas.

Readers asking for more science stories - 30%

Readers asking for more people stories - 20%

Ants Leetmaa (continued from page 1)

Just previous to assuming his new duties at GFDL in February, Dr. Leetmaa was the director of the National Weather Service's (NWS) Climate Prediction Center (CPC) and the lead climate forecaster in the U.S. for more than three years.

Under Dr. Leetmaa's leadership, CPC increased its seasonal forecasting successes. The most notable of these was the forecast for the 1997/98 El Niño and its U.S. impacts. This was the first time that regional impacts had been forecast six months in advance, allowing emergency managers and others to prepare for its effects.

His efforts resulted in the CPC producing more skillful seasonal forecasts, developing the framework in the NWS for linking weather and climate variability, and making the CPC an internationally known source of knowledge about climate variability. With Dr. Leetmaa's guidance, the CPC also introduced non-traditional climate forecast products designed to help the public cope with real problems for which there had been no forecast products, such as drought.

At MIT, he was influenced by his graduate advisor, the late Dr. Henry M. Stommel, who was considered one of the most important physical oceanographers of his time. Dr. Leetmaa describes his mentor as a "gentleman farmer and a theoretical oceanographer who believed that you can only go so far with theory." He said Dr. Stommel, who later returned to his work at the Woods Hole Oceanographic Institution, encouraged him to get into field research.

"Although I worked with Stommel on a theoretical problem, he steered me to becoming an observationalist because that's where we learn about the real world," said Dr. Leetmaa. "He was a real inspiration."

Dr. Leetma is known for building partnerships among other agencies and organizations, in and beyond the U.S. He is the third director in GFDL's history, following Dr. Jerry Mahlman, who retired from federal service last fall.

Send Us a Sample ....

Have a story idea? Please send your comments and ideas to Jana Goldman, Caren Madsen or Karen Tolson:

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